The April Lyrids, and contemporary Meteor Showers.

By W. F. Denning, Esq.

The return of these meteors was slightly observed this year on the evenings of April 20, 21, and 22, the two preceding nights having been overcast. On the 20th a watch was sustained between $8^h\ 45^m$ and $10^h\ 5^m$, with a very cloudy condition of sky, and only 7 meteors were seen, of which 3 were *Lyrids* and 3 belonged to a radiant near *ε Herculis*. On the 21st and 22nd the sky was very clear, and two hours' watching each night, between $10^h\ 30^m$ and $12^h\ 30^m$, revealed 25 (6 *Lyrids*) and 22 (3 *Lyrids*) meteors respectively. The motions were very slow; only 2 were as bright as first magnitude stars. The *Lyrids* were trained, and nearly all of them foreshortened close to a radiant, very exactly defined at 272°+32°. Of the other visible showers the most prominent were at 293°+43° (*δ Cygni*) and 263°+62° (*ξ Draconis*), and several additional ones in *Quadrans*, *Cygnus*, and *Corona* were very slightly seen.

My recent observations of this shower show the radiant to be almost identical with Comet I., 1861, with which a connection has been inferred. Former observations, including my own, place the centre a few degrees N.E. of the cometary radiant at 270°+32°, and the agreement of the two this year is an interesting point. In 1873–4 I had noticed the absolute inaction of this radiant on April 21, whereas this year it certainly continued on that and the following night. There were no traces of it on the 25th.

Whilst writing on the subject of the April shooting stars, I may mention that I lately undertook the careful examination of many thousands of paths (recorded by various observers in the morning hours of April 19–23), with the idea of finding the chief showers eastwards of the *Lyrids*, and situated in *Cygnus*, *Lyra*, *Vulpecula*, *Draco*, &c. I selected nearly 300 meteors with a length and direction of path conforming to such radiants, and having plotted them upon star-charts, the centres of 18 showers were found as under:—

Meteor-radiants eastward of the Lyrids, April 19–23.

Radiant ° °	No. of ↓s	Radiant ° °	No. of ↓s	Radiant ° °	No. of ↓s
*280+58	22	*314+49	13	*321+31	8
*294+41	25	*311+37	15	*292+14	7
*287+22	20	308+31	7	*275+11	7
*316+61	16	307+40	8	302+18	6
*284+44	11	*309+68	15	*332+42	5
*312+22	13	296+53	9	281+28	5

* Exact, and probably certain.

The majority of these are new showers. Amongst the catalogues which I consulted (chiefly Dr. Weiss's collection of Austrian observations, 1867–1874, which contain a very large number for April) there were many short paths and several stationary meteors. It is not surprising that these showers have nearly all of them escaped detection hitherto. They are samples of feeble, long enduring systems with a stationary radiant, and it must be remembered that reductions of this kind have never been undertaken before from such a mass of different materials, which in fact have only recently been published. The durations from April 19 to 23 are of course merely provisional, and I am convinced that a person would get the same radiants from meteors recorded during short periods before and after the dates mentioned. The first shower in the table is already well known as the *Draconids* (No. 64, at 281°+57°, of Mr. Greg's Catalogue, 1876). Of the remainder the next three showers, each giving a sharply defined active radiant, are the best, and appear to be new. I believe they may all be relied upon, and will be verified in time. The one at 294°+41° (slightly preceding δ *Cygni*) I have already confirmed from my own observations this year.

In April there are also many radiants (at present quite unknown) in *Perseus*, *Auriga*, *Cassiopeia*, and bordering constellations, but it is obviously desirable that, inasmuch as the subject is becoming very wide and confused, only the most active and certain showers should be mentioned. Amongst these are positions at 106°+46°, 91°+58°, 80°+74°, 53°+70°, 40°+73°, 130°+79°, indicated by about 10–15 meteors each. Strongly suspected radiants lie at δ *Cassiopeia*, η *Persei*, *p*-*q* and *c* (Bode) *Camelopardi*, β *Geminorum*, &c. This region needs more watching in April.

Ashley Down, Bristol,
May 8, 1878.

Observations of the Transit of Mercury, 1878, *May* 6, *made at the Royal Observatory, Greenwich.*

(*Communicated by the Astronomer Royal.*)

In addition to the instruments belonging to the Royal Observatory, the equatoreals and detached telescopes returned from the Transit of *Venus* expeditions were mounted in preparation for the Transit of *Mercury*. There were thus 14 instruments, of apertures ranging from 12·8 in. to 2·8 in., available, to each of which an observer was assigned; but the Sun was completely hidden by cloud throughout the whole transit, with the exception of a short break about 10^m after internal contact, and the following are the only observations which appear worth recording:—